

## EPA Act Light Duty Fuel Effects Program

Objective: Phases 1 and 2 are in support RFS 2 NPRM and Phase 3 is to establish the effects of RVP, T50, T90, aromatic and EtOH content on exhaust emissions from Tier 2 vehicles

### Program Design

- Phase 1:
  - Testing 75°F over the ARB Unified Cycle (LA92)
  - 3 'typical' fuels E0, E10, and E15
  - 19 High sales volume Tier 2, 2 High-emitter and 1 high mileage MLEV vehicles
- Phase 2: Repeat of Phase 1 except at 50°F
- Phase 3: Main Program
  - 24~25 fuels tested in 19 Tier 2 vehicles, E85 tested in 4 FFVs that are included in the 19
  - Fuel Matrix, 5 variables in matrix
    - 2 levels of RVP, T50, T90, Aromatics
    - 3 Levels of Ethanol, E0, E10, E20 plus E-85
    - Variables span the 5<sup>th</sup> and 95<sup>th</sup> percentiles of in-use fuel properties
    - Details on levels should be resolved this week
- Measured emissions, PM, CO<sub>2</sub>, NO<sub>2</sub>, VOCs, ethanol, carbonyls, N<sub>2</sub>O, NH<sub>3</sub> and HCN by FTIR, and SVOC speciation in phases 1 and 2

### Time Line

- Testing is scheduled to begin first week in April
- Phase 1 and half of Phase 2 finished by the end of June
- Phase 3 will be finished May 2009

### Program Status

- SwRI is behind in obtaining the last 9 vehicles due to issues with EPA supporting vehicle leases if program is canceled. EPA is providing documentation to support the vehicle leases
- Fuels for Phase 1 and 2 appear on track for delivery by the start of testing
  - Two of the three fuels have been successfully hand blended and the third appears doable to fuel vender (Halterman)

• 5 U.S.C. § 552(b)(5) Deliberative / Non-Responsive

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# EPAct Light Duty Fuel Effects Test Program

Oil-PM Pilot Study  
And  
PM Speciation Program

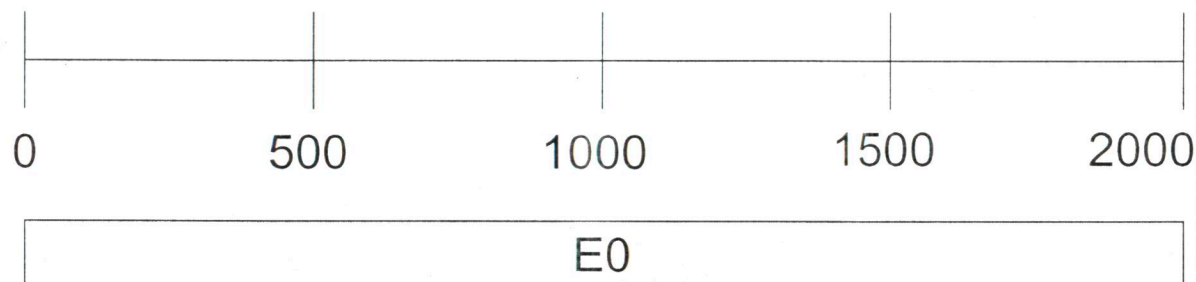
January 15, 2008

## *EPAAct Oil-PM Pilot Study*

- Objective 1: Define duration of engine oil conditioning needed to stabilize the effect of oil volatility on PM emissions
- Objective 2: Define the impact of lubricant interaction with fuel ethanol on PM emissions
- Results to impact Phase 3 of EPAAct study at SwRI (July)
- Fuels: E0, E10, E20
- Test vehicles: 2006 Ford F-150 (Bin 8) and 2007 Toyota Camry (Bin 5) from EG&G fleet
  - 4,000-20,000 miles on the odometer
- Lubrizol Corp. will provide oil and oil analysis

# Test Plan

## Phase 1: Mileage accumulation



### •At each 500 mile interval:

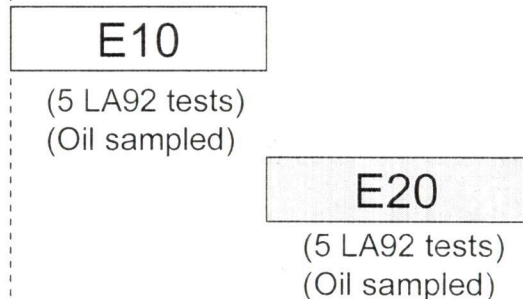
- 5 Cold start LA92 tests conducted
- Oil sample collected for analysis

2 Tier 2 vehicles tested

Total # of tests = 70

Phase 1 Timing: Feb - May

## Phase 2: Ethanol Testing



2 Tier 2 vehicles tested

Total # of tests = 10

Phase 2 Timing: May - June

## *EPA Act Oil-PM Pilot Study (Cont'd)*

- Same driver used for all tests on a given vehicle
- Measured parameters: THC, NMHC, NO<sub>x</sub>, CO, CO<sub>2</sub>, PM, EC/OC and engine oil temp. in sump
- Oil analyzed for volatility and ethanol content
- Total number of LA92 tests: 70
- Mileage accumulation on dynamometer
- Estimated duration of pilot: 15 weeks (May 11)

## *Estimated Costs*

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## Use of LOD vs. Contract Lab

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## Larger PM Speciation Study

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## Challenges with PM Speciation

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## Estimated Costs for PM Speciation Program

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